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Real-Time Observation of Human LINE-1 Retrotransposon Activity in Bacteria DAVNEET KAUR, THOMAS KUHLMAN, University of Illinois at Urbana-Champaign, KUHLMAN TEAM, NIGEL GOLDENFELD COLLABORATION — Transposable elements (TEs) are fundamental building blocks of all genomes. Retrotransposable elements (RTEs) are one of the two primary classes of TEs that are ubiquitous in eukaryotes. They propagate through a copy-and-paste mechanism utilizing reverse-transcribed mRNA intermediates. This leads to disruption and dispersal of coding and control elements throughout the genome, and consequently TEs are thought to be a major driving force behind diversification. However, RTEs are absent in most prokaryotes including E. coli. and the reason for this remains an open question. Despite their prevalence, there still remain many unanswered questions about how 'hot' or active L1 RTEs (L1Hs) function. In particular, their rates of activity and their effects upon their host are currently poorly understood and only roughly estimated within the limitations of available technology. To address these unanswered questions, we have constructed and released an L1H element in E. coli to quantify its rates of activity and physiological effects on its host. To overcome the technical limitations, we've designed fluorescent visualization and quantification techniques that make real time high resolution observations of retrotransposition events as they occur in living cells.

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